File 2:INSPEC 1969-2002/Jan W4
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File 3:INSPEC 1969-1982
(c) 1993 Institution of Electrical Engineers
File 4:INSPEC 1983-2002/Jan W4
(c) 2002 Institution of Electrical Engineers

Set	Items	Description
S1	23682	NH3 OR AMMONIA
S2	3302	FLUOROCARBON OR FLUOROHYDROCARBON OR C4F8 OR C4F6 OR C5F8 - OR CF4 OR C2F6 OR C3F8 OR CHF3 OR CH2F2 OR (FLUORINATED (1N) - (CARBON OR HYDROCARBON))
S3	6	S1 AND S2 AND ETCH?
S4	3	RD (unique items)

4/9/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

7014127 INSPEC Abstract Number: A2001-19-5275R-001, B2001-10-2550E-023
Title: Low-k materials etching **in magnetic neutral loop discharge plasma**
Author(s): Morikawa, Y.; Yasunami, S.; Chen, W.; Hayashi, T.; Uchida, T.
Author Affiliation: Inst. for Semicond. Technol., ULVAC JAPAN Ltd., Kanagawa, Japan
Journal: Journal of Vacuum Science & Technology A (Vacuum, Surfaces, and Films) Conference Title: J. Vac. Sci. Technol. A, Vac. Surf. Films (USA) vol.19, no.4, pt.1-2 p.1747-51
Publisher: AIP for American Vacuum Soc,
Publication Date: July-Aug. 2001 Country of Publication: USA
CODEN: JVTAD6 ISSN: 0734-2101
SICI: 0734-2101(200107/08)19:4:1/2L.1747:MEMN;1-Q
Material Identity Number: D746-2001-004
U.S. Copyright Clearance Center Code: 0734-2101/2001/19(4)/1747(5)/$18.00
Conference Title: 47th International Symposium of the American Vacuum Society
Conference Date: 2-6 Oct. 2000 Conference Location: Boston, MA, USA
Document Number: S0734-2101(01)08204-5
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Experimental (X)
Abstract: Low-k materials **etching** for FLARE/sup TM/ and a porous silica were carried out in a magnetic neutral loop discharge plasma at low pressure, below 1 Pa. **Fluorinated carbon** molecules were used as **etching** gases for porous silica. The **etch** rate of the porous silica was approximately two times higher than that of thermal SiO/sub 2/. This result means that consumption of perfluoro compound (PFC) gases is suppressed below at approximately half volumes. And organic low-k materials **etching** where **ammonia** gas or a gas mixture of nitrogen and hydrogen were used instead of PFC gas is an environmentally friendly process. After investigating an influence of a N/sub 2//H/sub 2/ mixture ratio in the organic materials **etch** process, a good experimental condition to get a low microloading profile was found at a N/sub 2/ ratio of 70%-80%. Under this condition N/sub 2//sup +/ and N/sub 2/H/sup +/ ions were dominant, and the signal intensity of the N/sub 2/H/sup +/ ion showed a maximum value in the mass spectrum. This may mean N/sub 2//sup +/ and N/sub 2/H/sup +/ ions play an important role for a low microloading **etching** . The nitrogen may be adsorbed on the surface and a thin passivation film may be created on the sidewall surface. (25 Refs)
Subfile: A B
Descriptors: permittivity; sputter **etching**
Identifiers: low-k materials **etching** ; magnetic neutral loop discharge plasma; **etch** rate; low microloading profile; surface; thin passivation film
Class Codes: A5275R (Plasma applications in manufacturing and materials processing); A8160C (Surface treatment and degradation in semiconductor technology); A7720 (Dielectric permittivity); B2550E (Surface treatment (semiconductor technology))

4/9/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6477650 INSPEC Abstract Number: B2000-03-2550G-017
Title: Novel approach for the photostabilization of chemically amplified photoresists
Author(s): Carpio, R.A.; Martinez, R.A.; Mohondro, R.D.
Author Affiliation: SEMATECH, Austin, TX, USA
Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.3678, pt.1-2 p.935-46
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 1999 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1999)3678:1/2L.935:NAPC;1-0
Material Identity Number: C574-1999-215
U.S. Copyright Clearance Center Code: 0277-786X/99/$10.00
Conference Title: Advances in Resist Technology and Processing XVI
Conference Sponsor: SPIE
Conference Date: 15-17 March 1999 Conference Location: Santa Clara, CA, USA
Language: English Document Type: Conference Paper (PA); Journal Paper (JP)
Treatment: Practical (P); Experimental (X)
Abstract: A special UV curing process which employs an **ammonia** blanketing gas was investigated to determine if a reduction in chemically amplified photoresist loss cold be attained in oxide, polysilicon, and metal plasma **etch** processes. In addition, a reduction in film shrinkage was sought relative to curing processes, which do not employ a basic gas during the stabilization process. Representative commercially available 248 nm chemically amplified photoresists from the t-BOC, acetal, and ESCAP families were included in this study. These studies were limited to unpatterned resist films and were conducted with an H-mod bulb, having a wavelength cut-off of 250 nm. The parameters varied in this study included UV irradiation intensity, process time, and temperature. Film shrinkage, refractive index, FTIR spectral changes, dissolution properties in an alkaline developer, and **etch** rate properties in **fluorocarbon** and chlorine based plasmas were measured. It was demonstrated that the **ammonia** -based photostabilization process result in less film shrinkage than the corresponding process with no basic purge gas. Evidence is provided that cross linking result from the UV curing process. The photostabilization process has been optimized for a number of photoresists to minimize the film shrinkage resulting from photostabilization and to significantly reduce the plasma **etch** rate. Benefits are shown to be greater for low activation energy and t-BOC type resists. (7 Refs)
Subfile: B
Descriptors: dissolving; Fourier transform spectra; infrared spectra; organic compounds; photochemistry; photoresists; plasma chemistry; refractive index; shrinkage; sputter **etching** ; ultraviolet lithography
Identifiers: photostabilization; chemically amplified photoresists; UV curing process; **ammonia** blanketing gas; chemically amplified photoresist loss; oxide; polysilicon; metal plasma **etch** processes; film shrinkage; t-BOC; acetal resists; ESCAP resists; unpatterned resist films; H-mod bulb; wavelength cut-off; UV irradiation intensity; process time; refractive index; FTIR spectral changes; dissolution properties; alkaline developer; **etch** rate properties; **fluorocarbon** based plasmas; chlorine based plasmas ; **ammonia** -based photostabilization process; purge gas; cross linking; photostabilization process; photoresists; plasma **etch** rate; low activation energy; t-BOC type resists; 248 to 250 nm; Si; SiO/sub 2
Class Codes: B2550G (Lithography (semiconductor technology)); B2550E (Surface treatment (semiconductor technology))
Chemical Indexing:
Si sur - Si el (Elements - 1)
SiO2 sur - O2 sur - Si sur - O sur - SiO2 bin - O2 bin - Si bin - O bin (Elements - 2)

Numerical Indexing: wavelength 2.48E-07 to 2.5E-07 m

4/9/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

01913844 INSPEC Abstract Number: A82088241, B82045964
Title: Reactive ion etching of silicon oxides with ammonia and trifluoromethane. The role of nitrogen in the discharge
Author(s): Smolinsky, G.; Truesdale, E.A.; Wang, D.N.K.; Maydan, D.
Author Affiliation: Bell Labs., Murray Hill, NJ, USA
Journal: Journal of the Electrochemical Society vol.129, no.5 p. 1036-9
Publication Date: May 1982 Country of Publication: USA
CODEN: JESOAN ISSN: 0013-4651
Language: English Document Type: Journal Paper (JP)
Treatment: Experimental (X)
Abstract: A 4% NH/sub 3//CHF/sub 3/, RIE discharge accurately reproduced micron-sized features in SiO/sub 2//Si or P-glass/Si substrates which had been patterned with either photoresist or X-ray trilevel resist. **Etch** rates of up to 600 and 1200 AA/min were obtained with SiO/sub 2/ and P-glass, respectively; **etch** rate ratios for SiO/sub 2//Si and P-glass/Si were approximately 15 and 30, respectively. Erosion of the resist was slow enough that it did not interfere with pattern transfer. In addition, no undercutting occurred and sidewalls in **etched** features were nearly vertical. **Ammonia** inhibited **fluorocarbon** polymer deposition by reaction with any deposit formed to make volatile cyanogen derivatives. Moreover, NH/sub 3/ moderated deterioration of the resist by the plasma. (10 Refs)
Subfile: A B
Descriptors: integrated circuit technology; photoresists; silicon compounds; sputter **etching**
Identifiers: Si oxides; SiO/sub 2/; reactive ion **etching** ; NH/sub 3/; integrated circuits; trifluoromethane; micron-sized features; SiO/sub 2//Si ; P-glass/Si substrates; photoresist; X-ray trilevel resist; **etch** rate ratios; pattern transfer; **fluorocarbon** polymer deposition
Class Codes: A8160 (Corrosion, oxidation, etching, and other surface treatments); B2220C (General fabrication techniques); B2550E (Surface treatment and oxide film formation); B2550G (Lithography)
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